Title: A Day In the Life of a Nuclear Criticality Safety Analyst

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A Day In the Life of a Nuclear Criticality Safety Analyst

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Disclaimer

- Not everyday in NCS is the same
- Not everyone's experiences are the same
- This is a high level overview of some of my personal experiences

NCS at LANL

- Nuclear criticality safety differs in no intrinsic way from industrial safety
- Integrated Safety Management
  - *Define the Scope of Work*
  - *Analyze the Hazards*
  - *Develop and Implement Hazard Controls*
  - *Perform Work within Controls*
  - *Provide Feedback and Continuous Improvement*
- Safety at the “Floor Level” implemented by
  - Employing people with the right safety attitude
  - Effective training
  - Effective procedures
  - Seeking guidance from the appropriate safety professionals

What is Nuclear Criticality Safety?

- The art and science of preventing criticality accidents
- Ensuring that operations personnel makes it home alive at the end of the day

6:30 am roll into work

- Check NCS Database for new works assigned
  - Repository of work requests from operation personnel
  - Flow down from management

  Examples:
    - CSEDs (Criticality Safety Evaluation Documents)
    - Procedure Reviews
    - FMORs (Fissionable Material Operational Reviews)

CSEDs

- Revision to existing CSED
  - Moving equipment from one glovebox to another
  - Little or no change to CSP controls

- New CSED development
  - New material form needed in location
  - Larger mass limits needed in location
  - Completely new process never previously performed

CSEDs Continued

- New CSED development
  - Usually required analysis of the process
  - Use of MCNP
  - Use of handbook data
  - Interaction with Ops personnel
  - Create controls easy for Ops personnel to follow

Derivation of Controls

- Controls are developed to limit process parameters important to criticality safety
  - Mass
  - Absorption
  - Geometry
  - Interaction
  - Concentration/ Density
  - Moderation
  - Enrichment
  - Reflection Volume

Procedure Reviews

- Change in existing process

  -Opening material in a place that it used to be prohibited

- New process

  -Performing a completely new operation in glovebox

NCS looks for concurrence with CSED description of process and CSP controls

FMORs

- Two part process
  - In office

    -Paperwork

    -Analyze documents in database pertaining to location

  - Field

    -Interact with Ops personnel

    -Make sure my understanding of process is true

How is Criticality Safety Typically Practiced?

- Operations personnel propose a new process
  - Change in an existing process

- NCS staff analyze the system
  - Use of MCNP
  - Use of handbook data

- NCS staff work with Operations and Engineering staff
  - Develop controls on the process to ensure safety
  - Develop controls that are easy for Ops to work to

A Day in the Life

- Interaction with Operations Personnel
  - Form working relationships
- Observe Operations
  - Learn processes
- Training (Providing and Receiving)
  - Interact with Operation Personnel in classroom setting
- Create New/ Updated Operations Analysis
  - Work close with Operations personnel

How to Obtain a Future in NCS

Other NCS Personnel Experiences